

Consensus Statement on the Minamata Convention on Mercury and Phase Down of Dental Amalgam in Hong Kong

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The Minamata Convention

The Minamata Convention on Mercury (the Convention) is a global treaty that aims to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds.¹ It was signed on the 10 October 2013 by 128 signatory nations, including China, and has entered into force on the 16 August 2017.² The Convention applies to Hong Kong SAR.²

The Government is preparing a piece of new legislation to implement the Convention in Hong Kong. The manufacture, import or export of a number of mercury-containing products, including thermometers and blood pressure devices, will be banned or phased out by 2020. Dental amalgam is the only mercury-containing product that is subject to a phase-down (Convention article 4, paragraph 3 and Part II of Annex A).¹

Safety of Dental Amalgam

Dental amalgam has been used for more than 150 years. Well designed evidence-based studies have confirmed its safety in dentistry. International authorities (such as the World Health Organisation, World Dental Federation, European Commission, Health Canada)³⁻⁶, national dental associations⁷⁻¹⁰, and professional organisations in paediatric dentistry (such as American Academy of Paediatric Dentistry)¹¹ also support the safety and effectiveness of dental amalgam as a restorative material.

Dental amalgam is widely used because of its ease of use, durability, appropriate mechanical properties and cost-effectiveness. In particular, it performs better in terms of quality, less complications, and longevity of restorations in situations where achieving good moisture control is difficult and in unfavourable restorative conditions (such as limited mouth opening, uncooperative patients).^{12,13} Amalgam is also beneficial to restore posterior teeth with interproximal caries.¹⁴ Although much research effort has been expended in developing amalgam alternatives, no universal substitute is currently available. Recent evidence indicates that resin composite, when placed carefully and following manufacturer's instructions because it is a technique sensitive procedure,^{15,16} is a promising alternative. Dental amalgam should remain available as a treatment option for the time being.¹⁷

Environmental Concerns of using dental amalgam

Although dentistry contributes only a very small proportion of mercury to the environment, there are concerns of its potential impact on the environment.¹⁸⁻²⁰ Amalgam waste discharges contribute to mercury in the environment through direct wastewater discharge, incineration of waste containing amalgam residues, and landfilling of municipal sewage sludge contaminated with amalgam.²⁰ Cremation of the deceased with amalgam restorations is another way metallic mercury vapour is emitted into the atmosphere.^{18,19}

Oral health professionals recognise the importance of collaborating in the interests of sustainability. They must take responsibility for meeting the demands of society to reduce their impact on natural resources at the same time as promoting optimal oral health for all people and maintaining patient safety.²¹

Therefore, the dental profession in Hong Kong supports the Convention's requirement to phase-down the usage of dental amalgam for a better environment.

Education and Training

Based on recommendations from the World Dental Federation, a strong focus on dental disease prevention and patient education is essential. This includes the early identification of initial carious lesions to avoid surgical intervention.²²

There is yet no ideal restorative material. Good understanding of the limitations and properties of restorative materials, and a proper execution of operative techniques are very important for the success of restorations. For example, good interproximal contact and contour are more difficult to achieve in resin composite restorations. Therefore, up-to-date operative techniques should be taught in undergraduate education and more importantly, continuing education courses updating practising dentists in alternative materials and techniques are critical to a successful phase-down of amalgam use.^{12,13}

Recommendations

To support the Convention in phasing down the use of dental amalgam, we make the following recommendations.

1. Non-mercury containing filling materials should be considered as far as practicable. Amalgam may be considered for conditions which are suboptimal for non-mercury containing restorative materials, such as difficult moisture control.
2. Dental amalgam must only be used in pre-dosed encapsulated form.
3. Amalgam separators are strongly recommended to be installed to retrieve the amalgam debris and residues.
4. Amalgam waste must be properly stored, handled and disposed of in accordance with the provisions of the Waste Disposal (Chemical Waste) (General) Regulation.
5. Dental amalgam restorations should not be removed and replaced with alternative restorative materials without clear clinical indications. In the case of a patient's request for non-specific or perceived health complaints, the patient should be fully informed of the implications of this decision.⁸

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